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SCHEME

FOR THE

CONSERVATION

OF

REMARKABLE BOULDERS IN SCOTLAND,

AND

FOR THE INDICATION OF THEIR POSITIONS ON MAPS.

From the Proceedings of the Royal Society of Edinburgh, 1870-71.

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MDCCCLXXI.

1.

Local Socy. Hist.
21 Mar 1872

Dear Sir,
Yours to hand for
which I thank you.

I am delighted to hear that
Lady Granville and her
son are progressing so well.
May they continue to improve.

Mrs. Cameron did not say
to me that the portmanteau
of Gaelic M.S.S. by her
father contained any Ossianic
poetry. What she said was
that it contained ^{old} M.S.S. col-
lected by her father to which
her brother himself added as
he was a zealous antiquarian
and collector of old Celtic
M.S.S. She said that her

brother lost everything he had
in company with his brother
officer, by the capsizing
of the boat but that the box
containing the old M.S.
was the only thing he seemed
most bitterly to regret.

I am sorry that my time
with Mrs Cameron was so
short. Otherwise I might
have obtained some inter-
esting information from her.
For she seemed to me an
intelligent woman and
she took to me as her country-
man very warmly.

Is this Hood's Cameron
you mention her son?
She had a son but I think
he was abroad.

I have not yet heard from
Finlayson, Milroy. Fear

the "fluke" he committed
in marrying that posse
Ginlay dame may ~~may~~
have the effect of making him
coil himself still farther into
his shell. I thought I took
down Finlayson's topographi-
cal penk some few years
ago for the sake of the name.
But we have been so knock-
ed about for want of house
accommodation, that my
papers are our always "found
when wanted."

What a mass of Gaelic
MS. you must have read
since you left Dist! Your
industry is some something
wonderful.

I sent you a fourer
yesterday containing an
epitome of a lecture upon
the Celtic delivered at Owens

Any prospect of an immediate Gallic chain at Edin?

By the way the "Boulder Committee" have found me out and have sent me this pamphlet. When my wife was in Edin. Capt. Thomas made a tracing from her sketch book of two large boulders which were sketched for you. These two boulders unquestionably were one at one period of their history. They lie at high water mark at 100 feet apart upon a low ice in V. Dist. The smaller one is convex and the larger one concave with many grooves and ridges and other corresponding marks upon the ~~two~~ two cleft faces. These boulders must have been carried and left when they are by ice. Was it the inland frost that broke them?

I.

ROYAL SOCIETY APARTMENTS, PRINCES STREET,
EDINBURGH, 12th August 1871.

SIR,—This circular, and the annexed documents, are sent to you by a Committee of the Royal Society of Edinburgh, of which I have the honour to be Convener.

The objects of the Committee being fully explained in these documents, I have to ask you to have the goodness to peruse them; and if you are able to afford to the Committee, or procure for them information bearing on these objects, you will answer the queries in the enclosed schedule, and return it with a halfpenny stamp thereon.

Your obedient servant,

DAVID MILNE HOME.

II.

MINUTE OF COMMITTEE, 5th August 1871.

Read Minute of the Royal Society Council, dated 21st April last, appointing this Committee.

The Committee are of opinion that, in order to prosecute the investigation referred to in said Minute, copies ought to be circulated of the Minute, Mr Milne Home's paper, and Report of the discussion in the Society which followed the reading of it: these documents being accompanied by a letter from the Convener, and a relative schedule specifying the points on which the Committee think information desirable.

The Committee agree to send copies of these documents to provincial Natural History Societies, as suggested in Mr Milne Home's paper, as also to the ministers of rural parishes in Scotland, and to any landed proprietors or their factors likely to aid in the inquiry.

And having regard to the expense which will be caused by the circulation of these documents, and the correspondence probably ensuing, the Committee resolve that subscriptions be asked from such persons as may be inclined to aid in the inquiry.

Farther, the Committee, considering that the carrying out of

these resolutions should be entrusted to a sub-committee resident in or near Edinburgh, nominate the following members to form such sub-committee, and three to be a quorum, viz. :—

Professor CHRISTISON.

Professor GEIKIE.

Professor WYVILLE THOMPSON.

Rev. THOMAS BROWN.

Captain WHITE.

Dr ARTHUR MITCHELL.

THOMAS STEVENSON, C.E.

DAVID MILNE HOME.

I think I pointed ^{the sketch of} these
stones to you in Lush's book.

Capt Thomas sent the
tracing he made to Mr Milne
Horne and the secretary
to the Boulder Committee who
has applied to me for more
information. As yet I have
little more than acknowledge
Mr Horne's communication.

But I must now set to and
write a fuller description of these
blocks. Mr Horne says that
he ~~was~~ sent a pamphlet
to every parish minister in
the Highland and not one of whom
has had the grace to reply.

You remember the
geological description you
wrote for the minutes of
Bearnary when we were leav-
ing Tintock. Mr Macdonald
Foster quipped "Mr Hogg"
that he would very soon be

upon himself if he sent you
"note" of description as the
Committee would gratefully
think that he was thorough
versant in his subject and
they would wish him again.

"The North" got frightened
and never sent you note.

May I ask you the
favour when you have
time of writing a short de-
scription of the general form
and geological formation
of the Long Island with your
name attached which I can
send to the North along with
the a description of the ice
borne boulders?

Apologising for this trouble
your

Yours faithfully
W. H. Munnick

S C H E M E

FOR THE

CONSERVATION OF REMARKABLE BOULDERS.

I. *Extract Minute of Council of the Royal Society of Edinburgh,*
21st April 1871.

The Council, whilst authorising Mr Milne Home's paper on the Conservation of Remarkable Boulders in Scotland, to be read at an Ordinary Meeting of the Society, agree, in compliance with a suggestion in the paper, to express approval of its object, and also of the scheme proposed for carrying it out.

The Council farther nominate the following Fellows of the Society as a Committee to assist Mr Milne Home in this matter:—

Professor CHRISTISON.

Professor GEIKIE.

Professor WYVILLE THOMSON.

The Rev. THOMAS BROWN.

Captain T. P. WHITE, Royal Engineers.

Dr ARTHUR MITCHELL, Edinburgh.

THOMAS STEVENSON, C.E., do.

Dr PAGE.

Professor NICOL, Aberdeen.

Professor YOUNG, Glasgow.

Mr MILNE HOME to be Convener.

The Council farther agree to supply the Committee with copies of Mr Milne Home's paper, when printed for the Proceedings of the Society, if the Committee should wish to circulate it, with a view to create an interest in carrying out the scheme.

With regard to the expense which may be incurred by the Committee, the Council understand that it is proposed to be met by special subscriptions; and in that case, the Council, in farther testimony of their approval of the scheme, authorise the Committee to draw upon the Treasurer of the Society for a sum of £10 as a subscription from the Society.

(Signed) J. H. BALFOUR. *Secretary.*

II. *A Paper on the Conservation of Remarkable Boulders in Scotland.*
By DAVID MILNE HOME. Read 29th May 1871.

Among many geological questions which wait solution, there is probably none more interesting or perplexing than the agency by which Boulders or “blocs erratiques,” as the French term them, have come to their present sites. I allude, of course, not to blocks lying at the foot of some mountain crag from which they have fallen by the decay or weathering of overhanging rocks, but to blocks which have manifestly been transported great distances, after being detached from rocks of which they originally formed part.

That many of the large isolated blocks lying on our mountain sides and on our plains have come from a distance, and by some means of tremendous power, is obvious even to an unscientific observer; and the perception of this truth by the popular mind has, in many cases, so invested these boulders with superstitious interest, that they have received names and given rise to legends, which impute the transport of them to supernatural agents.

There are two circumstances which very plainly indicate that these stones are strangers.

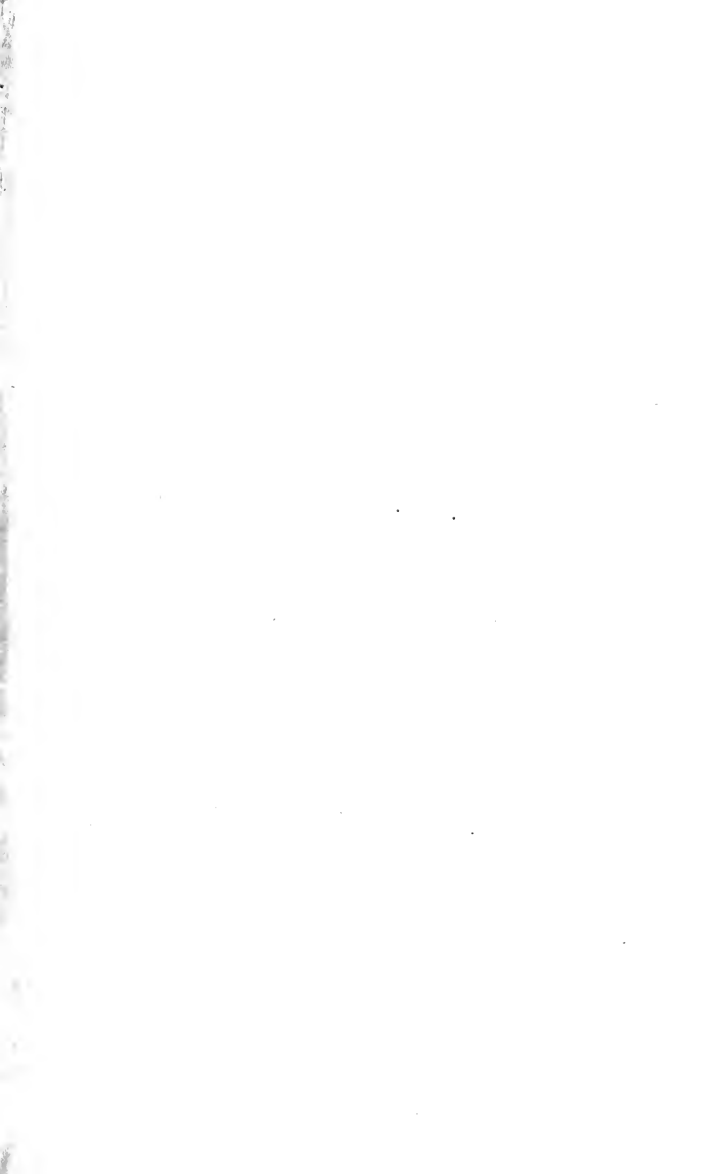
One is, that many of these blocks are on examination found to be different from any of the rocks prevailing in or near the district where they are situated.

The other is, that some of these blocks, whilst excessively hard,—so hard that it is difficult to break off a portion with the hammer, are nevertheless round in form—a form evidently acquired by enormous friction—such friction as would result from being rolled a long way over a rough surface.

The inference drawn from these two facts was confirmed when it was discovered, as in many cases it was, that rocks of the same nature as the block existed in a distant part of the country, and from which, therefore, it had probably come.

These round shaped blocks were the first to attract popular attention. The name given to them in Scotland of *boulders* has, no doubt been suggested by their shape.

It is accordingly only the rounded boulders which possess the



If there are in your Parish any Eclatitic Blocks or Boulders, *i.e.*, Masses of Rock which have evidently been transported from some remote locality, and of a remarkable size, say containing above 25 cubic yards, *i.e.*, about 50 tons,—please to answer the following queries :

ANSWERS.

QUERIES.

1. What is name of the Parish, Estate, and Farm on which the Boulder is situated, adding name of Proprietor of Estate and Tenant of Farm?
2. What are dimensions of Boulder, in length, breadth, and height, above ground?
3. Is the Boulder, as regards shape, rounded or angular?
4. If the Boulder is long-shaped, what is the direction by compass of its longest axis?
5. If there are any natural ruts, groovings, or striations on the Boulder, state :—
 (1.) Their length, depth, and number.
 (2.) Their direction by compass.
 (3.) The part of Boulder striated, *viz.*, whether top or sides.
6. If the Boulder is of a species of rock differing from any rocks adjoining it, state locality where rock of the same nature as the Boulder occurs: the distance of that locality

7. What is the nature of the rock composing Boulder, giving its proper Geological or Mineralogical name, or other description?
8. If the Boulder is known by any popular name, or has any legend connected with it, mention it.
9. What is the height of the Boulder above the sea?
10. If Boulder is indicated on any map, state what map. . . .
11. If Boulder is now, or has been, used to mark the boundary of a County, Parish, or Estate, explain what boundary. . . .
12. If there is any Photograph or Sketch of the Boulder, please to say how Committee can obtain it.
13. Though there may be no one Boulder in your Parish so remarkable as to deserve description, there may be groups of Boulders oddly assorted; if so, state where they are situated, and how grouped. Sometimes they form long lines more or less continuous,—sometimes they are piled up on one another.
14. If there are in your Parish any "Kames" or long ridges of gravel or sand, state their length, height, and situation.

SECRETARY,

ROYAL SOCIETY,

EDINBURGH.

(Boulder Committee.)

traditionary names and curious legends by which many of them are known. Such names as the Carlin's Stane, the Witch's Stane, Pech or Piet's Stone, Clachannadruid, Kirk-Stane, Pedlar's Stane, Thuggart Stane, and Devil's Putting Stane, are all applicable to rounded blocks.

When the geologist turned *his* attention to the subject, it was soon discovered that there were many blocks equally entitled to be called erratic, not round but square shaped; and which, though discovered to belong probably to rocks at a great distance, yet showed signs of little or no attrition. Moreover, many of these angular or sharp-edged blocks were comparatively soft and loose in structure, so that they could not have been rolled, for any considerable distance, without being broken or crushed into pieces, or into sand or mud.

On a more minute inspection and study of these erratic blocks, certain features were noticed which seemed to indicate the forces to which they had been subjected. Thus on many of them, deep scratches, ruts, and groovings were found, as if sharp pebbles or stones harder than themselves had been pushed over them, or squeezed against them under great pressure. It was also observed that, when a block had a long and a short axis, the longer axis was generally parallel with any well marked scratches or striæ on their surface; and moreover that the direction of these striæ frequently coincided with the direction in which the block itself had apparently come from the parent rock.

These circumstances soon led geologists to speculate on the nature of the agencies which could have effected a transport of the blocks. Some blocks are of enormous size, exceeding 1000 tons in weight.* Many, before they could have reached the places where they were found, must have travelled fifty or sixty miles, and have crossed valleys and even ranges of hills. In the county of Berwick, for example, there is a large block of gneiss, a rock which exists nowhere in that county or in the south of Scotland; and if it came from some of the hills in the Highlands, it must have crossed, not only the valley of the Forth, but the Kilsyth, Pentland, and Lammermoor Hills.

* The celebrated block near Neufchâtel, called "Pierre à bot," contains about 1480 cubic yards of stone, and is supposed to weigh about 2000 tons.

Sir James Hall and Sir George Mackenzie in this Society, who were the first to study the subject, advocated the idea of diluvial agency. At a later period, ice in various forms was suggested as the agent,—First, in the condition of glaciers filling our valleys; next, in the condition of icebergs floating over our island, whilst under the sea; and latterly, as a great sheet or cake stretching from the Arctic regions, and overspreading the whole of northern Europe.

It is not my intention to discuss these theories, or say which appears the most probable. I allude to them now, merely to indicate the tremendous character of the agencies, which it is found necessary to invoke for the solution of the problem,—agencies all implying a very different condition of things in Scotland, as regards configuration of surface and climate, from what now prevails. These phenomena are the more interesting, because, as most of the erratic blocks lie above all the rocks, and very frequently even above the beds of clay, gravel, and sand, which constitute the surface of the land we inhabit, they indicate probably the very last geological changes which occurred in this part of the earth's surface, and which there are some grounds for supposing, may even have occurred since this country was inhabited by man.

The basis on which geologists have been obliged to build their theories, it must be admitted, is somewhat narrow. It consists merely of observations made casually by individuals, who have noticed certain appearances in districts of Scotland which they happen to have visited; and, therefore, it is little to be wondered at, that more than half a century has been required for procuring the information, scanty as it is, which has been obtained.

What appears desirable for expediting the solution of the problem, is to organise a staff of observers, and to parcel out the country amongst them, for the purpose of observing facts likely to throw light on the subject, and of making these facts known from time to time, both with a view to verification, and as a basis for further speculation.

It has occurred to me, that the numerous natural history societies and field clubs existing in Scotland, would be valuable agents in this investigation; and, moreover, that individual geologists would be pleased to co-operate in their respective districts.

I hope no one will think that the object for which I suggest this investigation, is not worthy of the trouble which it implies, and of the patronage which I ask this Society to bestow on it. These erratic blocks bear the same relation to the history of our planet, as the ancient standing or memorial stones do to the history of the early races of mankind. These last-mentioned stones,—sometimes with sculpturing on them not yet understood,—sometimes arranged in circles or other regular forms not yet explained,—sometimes found in connection with sepulture, are beheld and studied with interest, on account of the gleams of light which they throw on the people who erected them; and popular indignation justly rises, when any of these prehistoric records of our ancestors are destroyed or mutilated. The great boulder stones to which I have been referring would, if investigated and studied, in like manner cast light on the last tremendous agencies which have passed over whole regions of the earth. It is therefore important to have as many of these boulders as possible discovered and examined, and to have such of them preserved as seem worthy of study. I need not say how rapidly, during the last century, both classes of ancient stones have been disappearing; and therefore, if it be desirable to preserve the most remarkable boulders, or at all events to record their existence, and their geological features, the investigation which I advocate, cannot be too soon begun.

Alike in illustration and in recommendation of this suggestion, I will refer to an investigation for the same object commenced two years ago in Switzerland, and in the adjoining parts of France. The design was twofold,—*First*, the conservation of remarkable boulders situated on the Jura and in Dauphiny; and *second*, the recording of their positions by maps, and of their characteristic features by schedules.

With this view a circular was drawn out, and issued by the Swiss Geological Commission, pointing out the scientific bearings of the subject, and invoking the co-operation not only of provincial societies, but also of municipal authorities in the cantons, and of landed proprietors. A few extracts from the Swiss circular may not be inappropriate:—

“These erratic blocks are composed of granite, schist, or limestone; but they rest on rocks of a different description. They

“ were so remarkable by their number and size, that, from an
 “ early period, they attracted the attention of naturalists, and
 “ suggested scientific inquiries. It is, indeed, interesting to seek
 “ to comprehend how enormous masses, with from 40,000 to 50,000
 “ cubic feet of contents, and weighing from 800 to 1000 tons, could
 “ be transported from the Alps from which they were evidently
 “ detached, to spots 40 and 50 leagues distant, crossing deep
 “ valleys, such as the lakes of Geneva, Neufchatel, Zurich, Con-
 “ stance, Lucerne, &c.

“ This great problem has been discussed by numerous philo-
 “ sophers, both of Switzerland and of foreign countries.” Then
 follows a list of names, including those of our own Playfair, Lyell,
 Murchison, Forbes, Tyndall, and Ramsay.

“ Unhappily,” (the circular goes on to state), “ during the last
 “ 100 or 150 years, these erratics have been broken up for building
 “ purposes, and even for road metal. Recently the work of destruc-
 “ tion has gone on more rapidly, and, unless stopped, the result
 “ will be to obliterate all traces of one of the greatest facts in the
 “ natural history of our country.

“ Though the destruction of these blocks is now advancing with
 “ great rapidity, there are still a number of very large specimens
 “ left, and these the Geological Commission is anxious to pre-
 “ serve.”

“ The members of Archæological Societies are interested in the
 “ conservation of these blocks, for they often bear those curious
 “ sculpturings, to which much importance is now justly attached.”

“ The lovers of legends must regret to see these blocks disap-
 “ pearing, for ancient tradition tells how some have been flung by
 “ the Devil on a poor hermit; that another bears the name of a
 “ fish merchant in a town of which there is now no trace, &c.

“ The Geological Commission considers that the time has come
 “ for appealing to all who have any power over the fate of these
 “ blocks, that is to say, to individual proprietors, to communal
 “ authorities, and to municipalities. The Commission also entreats
 “ natural history societies, Alpine clubs, and public bodies, to co-
 “ operate in this work, in order to preserve for Switzerland a
 “ feature of the country, which, if not altogether peculiar to it, is
 “ at all events better developed there than in any other.”

Besides making an appeal for the conservation of boulders, the same Swiss Geological Commission suggested the propriety of marking their exact position on the Government maps.

They farther expressed a hope that these measures might reach even beyond the frontiers of Switzerland, and they referred to an offer made by a French geologist to draw up an account of the Erratics of *Souabe*, with the view of obtaining co-operation from that quarter.

A committee was appointed to carry out these views, supply the necessary schedules and maps, and conduct the correspondence.

I shall next explain what resulted from the appeal. The circular containing it was issued in the autumn of 1867, and I now quote from a report presented to the Helvetic Society of Natural Sciences at a meeting in August 1869, drawn up by Messrs Favre and Soret.

They state that, very soon after the commencement of the investigation, it was found desirable not to limit it to boulders, but to include a description of enormous heaps of gravel, existing in many districts, having the appearance of ancient moraines, and in that view likely to throw light on the mode in which the boulders were transported. Accordingly, instructions were given to indicate on the maps the position of these gravel accumulations as well as of boulders.

Messrs Favre and Soret then narrate what had been done during the previous year in the different cantons, and from their report I give the following extracts:—

In the first place, they acknowledge the liberality of Colonel Siegfried, the Director of the Federal Topographical Department, in supplying maps to assist in recording the observations.

They farther acknowledge the assistance which Colonel Siegfried had given to the investigation, by issuing instructions to the engineers surveying the slopes of the Jura, to indicate on the maps, and to describe in their reports, any remarkable erratic blocks they met with.

Reference is next made to the proceedings of the societies and clubs in the different cantons. In some of the larger cantons, as *Lucerne* and *Vaud*, the country had been divided into five and six compartments, and a small sub-committee of members had been appointed to explore each. In one of these cantons, the municipal

authorities had given orders to the inspectors of roads and bridges to aid in the investigation.

In the canton of *Zurich*, notice is taken of one remarkable block, known as the "Stone for the sacrifices of *Hegsrüti*," which had been purchased by the Society of Antiquaries, and had been brought into the town of Zurich.

In the canton of *Soleure*, blocks of enormous size, and to the number of 228, had been marked, and appointed by the municipal authorities to be preserved, these blocks being situated on lands belonging to the canton. The celebrated block of *Steinhof*, weighing about 1400 tons, had been purchased by means of a special subscription, and made over in property to the Helvetic Society.

Several landed proprietors are named as having gifted particular boulder stones to the societies. Thus Mr Briganti, at *Monthey*, had gifted to the Helvetic Society one block out of a remarkable group, of which I well remember the late Principal Forbes once spoke in this Society, and which I had lately an opportunity of visiting. So also Mr Bonneton of Geneva had presented to the Alpine Club of that town a piece of land, containing what is described as a magnificent boulder, and known by the name of the "Stone of Beauregard."

Even the Federal Government of Switzerland had condescended to share in what really seems to amount almost to a national movement; for reference is made to an official communication from the Chancellor, stating that the Council of State had caused an order to be issued, that all erratic blocks situated in the cantonal forests should be preserved intact, till examined by the committee.

I have had sent to me a printed report of the steps taken in the canton of *Aargau*, drawn out by Professor Mühlberg. He mentions that one of the measures taken there, was the appointment of a referee to inspect the boulders which were discovered, with the view of determining whether they were worthy of being preserved. Professor Mühlberg mentions farther, that "the State undertakes the expense of printing and postages, as well as of the travelling of the canton referee to the sites of the most important boulders, and had in the meantime advanced 100 francs to defray expenses already incurred."

These extracts from the reports, of which printed copies have

been kindly sent to me by Professor Favre of Geneva, show what is doing in Switzerland for the promotion of an object which, under the auspices of this Royal Society, I should wish to see taken up in Scotland. And before concluding what I have to say about the Swiss movement, I may refer to one circumstance which ought to be gratifying to Scotchmen, viz., that the Swiss naturalists retain a grateful recollection of what has been done by Scotchmen for exploring and making known the interesting physical features of their beautiful country. Not only have they, in specifying the names of geologists who have written on Switzerland, included all the Scotchmen who have done so, but I see in one of Professor Favre's pamphlets, written in connection with this movement, allusion to the year 1741, "when (he says) the English first penetrated into the valley of Chamounix,"—"and gave to that valley "a celebrity, which the previous visits of several bishops had not "obtained for it." Professor Favre records the names of these English visitors, and among them are "Lord Haddington and his "brother, Mr Baillie." The pamphlet mentioning these names I sent to the present Earl of Haddington, that he might see the courteous allusion to his ancestor; and, in returning the pamphlet, he referred me to a paragraph in Douglas's Peerage, which mentions the fact that, in the year 1740, the Earl of Haddington and his brother, George, set out on their travels to the Continent, and were for some time located with other friends at Geneva—one of these being Stillingfleet, famous in his day as a naturalist, and who in one of his works alludes to the very agreeable *reunions* of his countrymen which took place at Geneva and the neighbourhood.

I will next refer briefly to the steps taken in the south of France in co operation with the Swiss movement. These began by a communication from Professor Favre to Mons. Belgrand, who, besides being President of the Geological Society of France, was Inspector-General of Bridges and Roads, a Government Department. This communication, which explained the object of the Swiss investigations, and also what was being done by the different cantonal societies and municipalities, was referred by Mons. Bertrand to two members, Messrs Falsan and Chantre, to report on.

It is from their report, the remarks of Mons. Bertrand upon it, and some notes of a subsequent date, published in the Transactions

of the Geological Society of France for December 1869, that I make the following extracts:—

The great interest attaching to the investigation is allowed by the reporters, and a compliment is paid to the Swiss naturalists for commencing and urging it.

Reference is made to the rapid disappearance of the boulders, and especially limestone boulders, which were generally broken up for limekilns. The reporters state that near Lyons, the greater part of the boulders had been destroyed long ago, and in particular one weighing about 150 tons, which marked the point where the boundaries of three parishes met.

Examples, however, of remarkable boulders still untouched, with legends attached to some, are specified, such as the "Pierre du Bon Dieu," of 120 tons, and the "Pierre du Diable," of 56 tons, which it is strongly recommended should, with many others of less note, be saved from destruction or injury.

Reference is then made to the steps which should be taken to carry out these views. Circulars, it is said, should be drawn up, and sent not only to the public departments which superintend the management of Government or communal lands, but also to individual landed proprietors, pointing out the scientific interest attaching to these erratic blocks.

These suggestions were at once favourably responded to and acted on. Three public departments or functionaries, viz., the Minister of Public Works, the Director-General of Forests, and the Prefects in each of the provinces of Savoy, High-Savoy, Ain, Rhone, and Isère—all adjoining Switzerland—are stated to have lent their willing co-operation.

After the project had received the approbation of the Geological Society of France, and the promise of important official support, an appeal to the friends of Natural Science was drawn up by Messrs Falson and Chantre very similar to the appeal which had been previously drawn out and issued in Switzerland. This appeal, after describing the movement and proceedings in Switzerland, proceeds thus:—"Such is the object pursued vigorously in Switzerland with the co-operation of departments and of individuals. " In a word, see what is going on near ourselves. Can we remain " outside of, and indifferent to, this scientific enterprise, especially

“ when Mons. Favre has asked us to engage in the same work, and
 “ to undertake for our country what he is doing for his? We are
 “ bound to answer this appeal. The solution of the same questions
 “ ought to occupy us. These erratic phenomena abound every-
 “ where in our district. The debris of rocks torn from the Alps
 “ cover the plain of Dauphiny, the plateau of the Dombes, the hills
 “ of Croix, Rousse, and Sainte-Foy. Already many geologists
 “ have studied these erratic phenomena in our neighbourhood,
 “ without being able to discover a solution. The truth, when we
 “ seek it, seems to fly from us; but we must persevere and pursue
 “ it till it is caught.

“ Our desire is simply to prevent the destruction of the most
 “ remarkable blocks, and leave them on their natural sites, and
 “ also to obtain a collection of specimens to illustrate them, and
 “ we hope that our administrations will in this object not be behind
 “ those of Switzerland and the department of Haute Savoie. Their
 “ example would, we doubt not, be followed by individual proprie-
 “ tors, where boulders cease to be regarded as mere masses of stone
 “ of unusual size, but without scientific value.”

Besides this appeal, printed copies of which were extensively circulated, directions and schedules were drawn out to be transmitted to local societies as well as to individuals who should undertake the investigation, in particular districts, maps of these districts being at the same time supplied.

The documents from which I have made these extracts were, as I have said, transmitted to me by Professor Favre of Geneva. He wrote to me at the same time, and concluded his letter by saying, “ Voila, Monsieur, un aperçu de la marche de cette entreprise. Je serai bien heureux, de le voir s’étendre a l’Ecosse.”

In a subsequent letter he repeats his suggestion thus :—“ Si vous pouvez organiser quelque chose de semblable en Ecosse, vous m’obligerez infiniment, en me tenant au courant.”

In a third letter, he says, “ Permettez moi de vous renouveler la demande que je vous ai adressé, en vous priant de me tenir au courant de ce que nous ferez pour les blocs erratiques de l’Ecosse, et des resultats que vous obtiendrez.”

I have given these details of the proceedings in Switzerland and France, and quoted these passages from Professor Favre’s letters,

in order both to add weight to my proposal, and show how we may proceed to attain it.

I have alluded to the existence throughout Scotland of many provincial societies whose objects are not inconsistent with the investigation which I think they may be invited to engage in. Sir Walter Elliot of Wolflee has lately been at pains to make out a list of all the Natural History Societies and Field Clubs existing in Great Britain and Ireland.

I now give this list, in so far as it applies to Scotland, in the hope that, when our proceedings are published, this list may appear in it, so that if any societies or clubs are seen to have been omitted, the omission may be taken notice of and supplied.

1. Berwickshire Naturalist's Club. (*Secretary*, Mr Geo. Tate, Postmaster, Alnwick.)
2. Hawick Archæological Society. (*Secretary*, David Watson.)
3. Tweedside Physical and Antiquarian Society.
4. Dumfries and Galloway Natural History and Antiquarian Society.
5. Edinburgh Geological Society. (*Secretary*, Geo. A. Panton, Hope Terrace.)
6. Edinburgh Naturalists' Field Club. (*Secretary*, Andrew Taylor, 5 St Andrew Square.)
7. Glasgow Natural History Society. (*President*, John Young, M.D.; *Secretary*, Robert Gray, 2 Lawrence Place, Dowanhill.)
8. Glasgow Geological Society. (*President*, John Young, M.D.; *Secretary*, Dugald Bell, 136 Buchanan Street.)
9. Alloa Society of Natural History and Archæology.
10. Largo Field Natural History Society. (*Secretary*, Charles Howie.)
11. Perth Literary and Antiquarian Society.
12. Perthshire Society of Natural History. (*President*, Dr Buchanan White; *Secretary*, A. T. Scott.)
13. Montrose Natural History Society. (*Secretary*, Mr Robert Barclay.)

14. Aberdeen Natural History Society.

15. Aberdeen Philosophical Society. (*President*, Professor Ogilvie, M.D.; *Secretary*, Alex. D. Milne, 37 Thistle Street.)

16. Natural History Society, Elgin.

17. Orkney Natural History Society.

Being myself a member of one of these Societies, I know that some of its members have devoted themselves to the subject of boulders, and of moraine-looking deposits, occurring within the district over which the operations of the Society extend.

Sir Walter Elliot tells me that he has information of a Field Naturalists' Club in England which has specially directed its attention to the boulders of the district.

It is quite true that, in Switzerland and in the south of France boulders, considerable in size and numbers, are much more abundant than in Scotland, so that little searching is required to enable the provincial societies of these countries, to carry out the investigation proposed to them.

On the other hand, let it not be imagined, that in Scotland the boulders generally are not of such interest as to deserve the adoption of proceedings similar to those now being adopted in Switzerland and France. Even within the limited range of my own discoveries, I know and have measured eight boulders in the south-east of Scotland, the smallest of which is 10 tons and the largest 918 tons in weight, and all possessing features more or less significant.

There are others equally large which I have heard of, but have not seen. Moreover, almost all these boulders have old traditional names, and many of them legends which indicate, that they have been objects of popular and even superstitious regard.

There are two objects which ought to be aimed at. The first is to obtain a list of all boulders which appear remarkable; *i.e.*, remarkable for size, and instructive on account of polishing, ruts on the surface, or any other circumstance. The second is to put down on maps, a mark to represent the exact position of boulders, occurring in groups, or of large individual boulders.

Moreover, accumulations of gravel, sand, or clay in any district, in so far as they seem to have been produced by agents now no longer operating in the district, should be notified.

In order to carry out these suggestions, I would venture very respectfully to ask that the Council of this Society should pass a Special Minute expressing approval of the subject explained in this paper, and appointing a Committee of the Fellows of this Society to carry out farther proceedings. The circumstance that this Society had expressed its approval, and taken steps to aid the investigation, would alone ensure for it a favourable consideration.

The Committee would, of course, communicate with the various provincial societies throughout Scotland, by enclosing a copy of this paper or an abstract of it, and intimating readiness to send the necessary Schedules and Directions, should a willingness be expressed to enter on the investigation proposed.

I have in these remarks alluded only to the steps necessary for discovering the existence of remarkable boulders, indicating their position on a map, and obtaining a correct description of them. But the other object, which also engages attention so much in Switzerland and France, should not be lost sight of here. I allude to the conservation of boulders. The disappearance of numerous camps, buildings, standing stones, and other objects of archaeological interest in all our counties, which every one now regrets, has been owing in a great measure to ignorance on the part of the proprietors and tenants on whose lands they were situated, of the value and even nature of these objects. But this work of destruction has been happily now stopped, and chiefly by the interference and influence of our Society of Antiquaries. In like manner, the demolition of Boulders which has been going on rapidly in Scotland, will, I hope, be arrested, when the proprietors and tenants on whose lands they stand, are made aware of the interest they excite, and of what is being done to preserve them in other countries. Of course, it would only be certain boulders which it would be desirable to preserve, boulders remarkable for size, or shape, or position, or for markings upon them; and when a report was made to the Committee of any boulder of this description, the Committee would judge whether an application should be made to the proprietor on whose lands it was situated, to spare the stone, so that it

might be preserved for examination and study. I have little doubt that such an appeal would be attended to. Indeed, in the great majority of cases, a proprietor would be pleased to learn, that an object of scientific interest had been discovered on his estate, and would be glad to have it in his power to accede to any request in relation to it coming from a Committee of this Society.

With regard to the mode of meeting the expenses attending the investigation and other proceedings suggested in this paper, it occurs to me that subscriptions from individuals should be chiefly relied on, and that the Council of this Society should only promise such aid as the state of the Society's funds and their appreciation of the proceedings of the Committee, may suggest to them. The Committee will, no doubt, make a Report at least once a year of their proceedings, which the Council may allow to be read at a meeting of the Society, if its contents were sufficiently interesting.

III. Report of Discussion on foregoing Paper.

The President remarked—The Fellows present have no doubt listened with much interest to the paper just now read. The object is a very important one—for even in the neighbourhood of this city, many rocks and boulders have been from time to time discovered, of the character referred to in the paper, which, unfortunately, have not been preserved. I remember in particular, when the Queen's Drive round Arthur's Seat was being formed, several of these rocks and boulders were met with, and I did what I could to have them preserved as objects of geological interest,—but without success. The investigation proposed by Mr Milne Home will be attended with no small amount of trouble and some expense, and it will require energy and perseverance. But the object is important; and, as in other countries, geologists have commenced the investigation and have invited us to co-operate, our Society ought to respond and assist. I wish success to the labours of the Committee whom the Council have appointed; and the Society will be very glad to receive a report of their proceedings after they have made some progress.

Captain White begged permission also to express the interest which he took in the matter, and to state that, as the superinten-

dent of the Ordnance Survey of Scotland, under Sir Henry James, he would be happy to lend all the assistance in his power. He had already had some correspondence with Sir Henry James on the subject; and, he might mention that the surveyors, when examining a country, had instructions to take notice of all isolated boulders remarkable for size, with a view to an indication of their position on the Government maps. Groups of boulders, however, could not be so easily indicated. As the Council had done him the honour of putting him on the Committee, he would be very happy to lend his assistance.

Mr Milne Home expressed gratification at the remarks which had been made. A stronger proof of the expediency of having such a Committee as the Council had named could not have been given, than that mentioned by the President; for, if such a Committee had existed when the boulders and striated rocks to which he had referred were discovered, when the Queen's Drive was being made, the Committee would probably have succeeded in not only getting them preserved, but in affixing to them some mark or notice to show why they were preserved. He might mention that these boulders and rocks were described in papers by the late Dr Robert Chambers and himself, which were read in this Society; and they will be found in the Proceedings of the Society.

